

PATENTIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: JÜRGEN VALENTIN ET AL-1 (PCT)
PCT No.: PCT/DE 01/00089 FILED: JANUARY 11, 2001
TITLE: SCANNING USING POSITION TRANSMISSION FOR
TRIGGERING THE RECORDING OF MEASURED VALUES

PRELIMINARY AMENDMENT**BOX PCT**

Ass't. Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Preliminary to Examination, please amend the above-
identified application as follows:

IN THE SPECIFICATION

Page 1, after the title, please insert as follows:

--CROSS REFERENCE TO RELATED APPLICATIONS

Applicants claim priority under 35 U.S.C. §119 of German
Application No. 100 01 800.9 filed January 18, 2000. Applicants
also claim priority under 35 U.S.C. §120 of PCT/DE01/00089 filed
January 11, 2001. The international application under PCT
article 21(2) was not published in English.--

Page 4, third full paragraph, line 2 to the top of page 5,
please amend as follows:

Said problem is solved by the invention according to the characterizing part of claim 13 in that the control of the displacement is prompted to start the displacement movement via a software instruction; trigger pulses transmitting the position are tapped at discrete and constant local intervals from the displaced element for the location-related readout of the sensor; that signals which, in turn, are location-related, are derived from the basic signals so obtained by means of electronic data processing, such location-related signals serving for triggering the recording of measured values of the sensor; and that the measured values so obtained are stored and then asynchronously transmitted to the controller.

Page 5, first complete paragraph, please amend as follows:

In terms of the device, the problem is solved according to the characterizing part of claim 14 in that provision is made on the displaceable element for a position transmitter whose signals are converted into position-related, derived trigger signals by means of an interface connected upstream of the sensor and downstream of the displacement control, for triggering the recording of values measured by the sensor; and that the direction-dependent local increments are added up in a memory, whereby the detection of the direction is carried out by means of a program logic.

Page 5, last paragraph through to top of page 6, please amend as follows:

The specimen is preferably arranged on a table that can be displaced in the x-y directions. However, it is conceivable also (according to claim 16) that the sensor is displaceable.

IN THE CLAIMS

Please cancel original claims 1-12 and replace with new claims 13-24 as follows:

--13. A method for measuring particularly surface topologies with microscopic resolution, in which a measuring sensor and a specimen to be detected are displaced in relation to each other in the x-y directions, whereby the displacement movement is controlled by means of a controller recording the values measured by the sensor; whereby the sensor is read out at defined intervals after the sensor and the displacement movement have been started, and individual detected profiles, which are locally offset from each other in a dimension extending perpendicular to the direction of the profile, are combined so as to form a measured area after the measurement has been completed, characterized in that via a software instruction, the displacement control is initiated to start the displacement movement, position-transmitting trigger pulses are tapped in discrete and constant local intervals from the displacing element for position-related readout of the sensor; derived position-

related signals, which in turn are position-related, are generated from the basic signals so obtained by means of electronic data processing; such derived signals serving for triggering the recording of the measured values of the sensor; and the measured values so obtained are stored and then asynchronously transmitted to the controller.

14. A device for carrying out the method according to claim 13, comprising an interval sensor arranged above a surface of the specimen and a specimen carrier, said sensor and said specimen carrier being displaceable relative to each other by a motor drive in the x-y directions; a control for the displacement movement, and a controller is connected with the sensor for recording the measured values of the sensor, on the one hand, and with the control for the displacement movement on the other, characterized in that provision is made on the displaceable element (1, 3) for a position transmitter whose signals are converted by means of a displacement control (2()) connected upstream of the sensor (1) and an interface connected downstream of the displacement control (2), into position-related, derived trigger signals for triggering the recording of the values measured by the sensor (1); and that the direction-dependent local increments are added up in a memory, whereby the detection of the direction takes place by means of a programming logic.

15. The device according to claim 14, characterized in that the specimen is arranged on a table (3) displaceable in the x-y directions.

16. The device according to claim 14, characterized in that the sensor (1) is displaceable in the x-y directions.

17. The device according to claim 14, characterized in that for tapping the position-transmitting trigger pulses on the displaceable element (1, 3), provision is made for an incremental angle encoder mounted on the axle of the motor, with the direction of said encoder coinciding with the direction of displacement of the measuring profile.

18. The device according to claim 14, characterized in that for tapping the position-transmitting trigger pulses on the displaceable element (1, 3) itself, an incremental or absolutely measuring position transmitter is provided.

19. The device according to claim 18, characterized in that the position transmitter is a glass scale.

20. The device according to claim 14, characterized in that the interface (8) provided for deriving the basic signals comprises a programmable and storing microcontroller.

21. The device according to claim 20, characterized in that the microcontroller is a component of the displacement control (2).

22. The device according to claim 14, characterized in that the controller (4) is a PC.

23. The device according to claim 14, characterized in that the sensor (1) is an optically operating sensor.

24. The device according to claim 23, characterized in that the sensor (1) is a laser spot sensor.--

Please add the Abstract, attached hereto on a separate sheet.

REMARKS

By this Preliminary Amendment, the specification has been amended to insert the proper claim numbers. Original claims 1-12 have been replaced with new claims 13-24 so that the multiple dependency of certain of the dependent claims have been removed to avoid the surcharge associated therewith, and an Abstract is being provided. No new matter has been introduced. Entry of this amendment is respectfully requested.

Respectfully submitted,
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Enclosure: Exhibit A and an Abstract

EXPRESS MAIL NO. **EL 871 447 561 US**

Date of Deposit: September 18, 2001

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10, on the date indicated above, and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.


Lisa L. Vulpis

09336827-094804

EXHIBIT A

A MARKED-UP VERSION WITH MARKINGS TO SHOW
CHANGES MADE TO THE SPECIFICATION

Page 4, third full paragraph, line 2 to the top of page 5, please amend as follows:

Said problem is solved by the invention according to the characterizing part of claim [1] 13 in that the control of the displacement is prompted to start the displacement movement via a software instruction; trigger pulses transmitting the position are tapped at discrete and constant local intervals from the displaced element for the location-related readout of the sensor; that signals which, in turn, are location-related, are derived from the basic signals so obtained by means of electronic data processing, such location-related signals serving for triggering the recording of measured values of the sensor; and that the measured values so obtained are stored and then asynchronously transmitted to the controller.

Page 5, first complete paragraph, please amend as follows:

In terms of the device, the problem is solved according to the characterizing part of claim [2] 14 in that provision is made on the displaceable element for a position transmitter whose signals are converted into position-related, derived trigger signals by means of an interface connected upstream of the sensor and downstream of the displacement control, for triggering the recording of values measured by the sensor; and that the direction-dependent local increments are added up in a memory, whereby the detection of the direction is carried out by means of a program logic.

Page 5, last paragraph through to top of page 6, please amend as follows:

The specimen is preferably arranged on a table that can be displaced in the x-y directions. However, it is conceivable also (according to claim [4] 16) that the sensor is displaceable.

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